

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JE99/0593

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> C01B31/04, C01B31/02, C01B21/064

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> C01B31/04, C01B31/02, C01B21/064

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2003
Kokai Jitsuyo Shinan Koho	1971-2003	Toroku Jitsuyo Shinan Koho	1994-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CA(STN), Jstplus(JOIS)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	A.V. KRASHENINNIKOV et al., Production of defects in supported carbon nanotubes under ion irradiation, PHYSICAL REVIEW B, 2002.04., Vol. 65, 165423	1-7
A	F. BANHART et al., The formation, annealing and self-compression of carbon onions under electron irradiation, CHEMICAL PHYSICS LETTERS, 1997, Vol. 269, pages 349 to 355	1-7
A	JP 10-139411 A (Sumitomo Metal Industries, Ltd.), 15 May, 1998 (15.05.98), Full text; Fig. 1 (Family: none)	1-7

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
27 October, 2003 (27.10.03)

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11 November, 2003 (11.11.03)

Name and mailing address of the ISA/  
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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/J~~98~~/10593

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 7-172807 A (NEC Corp.), 11 July, 1995 (11.07.95), Claims; Fig. 1 (Family: none)	1-7
A	JP 10-139411 A (NEC Corp.), 26 May, 1998 (26.05.98), Claims (Family: none)	1-7
A	JP 6-184738 A (Mitsubishi Electric Corp.), 05 July, 1994 (05.07.94), Claims (Family: none)	1-7
A	D. GOLBERG et al., Boron nitride nanotube growth defects and their annealing-out under electron irradiation, CHEMICAL PHYSICS LETTERS, 1997, Vol.279, pages 191 to 196	1-7

Inventions according to claims 1 to 7 relate to "a method for preparing a reactive layered material in the form of graphite". In the present specification, only a layered material in a graphite form having STONE-WALES type defects is described as the reactive layered material in the form of graphite. Example 1 relates to a method for forming STONE-WALES type defects in graphite, and example 2 relates to a method for forming STONE-WALES type defects in h-BN. However, in examples 1 and 2, the products by the above method are not verified by the use of a specific detection method with respect to whether or not they have STONE-WALES type defects nor with respect to their reactivity. Further, also from parts except examples in the present specification, it cannot be confirmed that a structure having STONE-WALES type defects or another reactive structure is actually formed.

According, the present specification lacks the disclosure in the meaning of PCT Article 5 and the support by the disclosure in the specification in the meaning of PCT Article 6, with respect to the method for preparing a reactive layered material in the form of graphite according to claims 1 to 7.

Despite of the above, the search for a method which uses a carbon nanotube or a boron nitride nanotube in place of a base material in example 1 or 2, respectively, has been carried out, since the search has been possible although the requirements of the disclosure and the support in the specification are lacked as described above.